

(PCT Article 36 and Rule 70)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2004/016513

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-17 as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☒ the claims:
- nos. _____ as originally filed/furnished
- nos.* _____ as amended (together with any statement) under Article 19
- nos.* 1-4, 6-9 received by this Authority on 19.07.2005
- nos.* _____ received by this Authority on _____
- ☒ the drawings:
- sheets fig. 1-10 as originally filed/furnished
- sheets* _____ received by this Authority on _____
- sheets* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☒ The amendments have resulted in the cancellation of:
- ☐ the description, pages _____
- ☒ the claims, nos. 5, 10
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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PCT/JP2004/016513

Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1. Statement			
Novelty (N)	Claims	1-4, 6-9	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-4, 6-9	NO
Industrial applicability (IA)	Claims	1-4, 6-9	YES
	Claims		NO
2. Citations and explanations (Rule 70.7)			
<p>Document 1: JP 2001-203623 A (Oki Electric Industry Co., Ltd.), 27 July 2001 (Family: none)</p> <p>Document 2: JP 2001-251233 A (Toshiba Corp.), 14 September 2001 & US 2001/0049295 A1</p> <p>Document 3: JP 2003-110476 A (Matsushita Electric Industrial Co., Ltd.), 11 April 2003 & WO 2003/030404 A1 & EP 1353453 A1 & US 2004/058711 A & DE 060205582 D & CN 001488205 A</p> <p>Document 4: JP 2002-135032 A (NEC Corp.), 10 May 2002 & EP 1202389 A1 & CN 1350348 A & US 6433738 B1</p> <p>Document 5: JP 2003-283394 A (NEC Corp.), 03 October 2003 & WO 2003/081805 A1 & US 2005-0153657 A & EP 001492252 A1 & CN 001656711 A</p> <p>Claims 1 and 6</p> <p>Multi-beam transceivers that estimate the direction from which an incoming reception signal will arrive based on the predetermined delay profiles for each of a plurality of beams and then implement directional control in order to transmit the outgoing transmission signals in the estimated arrival direction of the incoming reception signal are well known, as disclosed in document 1</p>			

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	<p>(paragraphs [0088] to [0108] and fig. 8) and document 2 (paragraphs [0072] to [0079] and fig. 5) for example.</p> <p>Meanwhile, document 3 (paragraphs [0059] and [0060], and fig. 4 and 5) indicates that upon detecting a different delay profile with the same path timing as the path timing of the delay profile that was determined to have the maximum reception signal power, the reception antenna weights for the beams associated with the two delay profiles that were determined to have said path timing are subjected to proportional calculations in order to calculate a new antenna weight, which corresponds to a direction between the two beams that are associated with the two delay profiles in question.</p> <p>In addition, it is apparent that the invention disclosed in document 3 also detects the reception signal power of each beam when detecting the path timing.</p> <p>Furthermore, techniques for determining the direction of a user who is located in the vicinity of a point where two adjacent beams intersect based on the reception antenna weights and the reception signal powers of the two beams are well known, as disclosed in document 4 for example.</p> <p>Such being the case, the invention disclosed in document 3 is considered to calculate a new antenna weight by subjecting the reception antenna weights and the reception signal powers of two beams to proportional calculations.</p> <p>The method disclosed in document 3 is a method for inferring the direction from which signals will arrive based on the delay profiles for each of a plurality of beams, and thus it would have been easy for a person skilled in the art to conceive of configuring the</p>

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inventions set forth in claims 1 and 6 by applying the method in question as the method for inferring the direction from which signals will arrive in the well-known multi-beam transceivers that are disclosed in documents 1 and 2.

Claims 2 to 4 and 7 to 9

The multi-beam transceiver disclosed in document 1 receives the reception signals by means of a rake reception (refer to paragraph [0062]), and said multi-beam transceiver is considered to be equipped with a delay unit for delaying the reception signals by a prescribed period based on the path timing that was established by means of the searcher.

As a result, document 1 is considered to disclose a technique wherein reception signals are used to generate a delay profile for each beam; the path timing is output in combination with the beam number of a beam that was determined to have said path timing; the reception signals are delayed by a prescribed period based on the aforementioned path timing; and the reception antenna weights that correspond to the aforementioned beam numbers are used to generate a new weight.

In addition, transceivers that employ multi-beam antennas wherein the reception signal power of the signals that were weighted by means of the reception beam former are measured in order to determine the transmission direction are well known, as disclosed in documents 4 and 5 for example.

Such being the case, it would have been easy for a person skilled in the art to conceive of configuring the inventions set forth in claims 2 to 4 and 7 to 9 in the

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light of documents 1 to 5.